

12-23-03

1625



FSUB 10479.2
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Robert A. Holton

Art Unit 1625

Serial No. 10/673,897

Filed September 29, 2003

Confirmation No. To Be Assigned

For PREPARATION OF SUBSTITUTED ISOSERINE ESTERS USING METAL
ALKOXIDES AND β -LACTAMS

December 22, 2003

TO THE COMMISSIONER FOR PATENTS,

P.O. BOX 1450

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SIR:

INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R. 1.97 and 1.98 and MPEP 609, and in compliance with the duty of disclosure set forth in 37 C.F.R. 1.56, applicant submits copies of references 33 and 43 listed on the attached PTO/SB/08A for consideration by the Patent and Trademark Office in the above-entitled application and to be made of record therein. Copies of references 1-33, 35-42, and 44-72 have not been provided in accordance with MPEP 609 and 37 C.F.R. § 1.98(d) because they are of record in prior application Serial No. 10/289,103, filed November 6, 2002, relied upon for an earlier filing date under 35 U.S.C. § 120.

Respectfully submitted,

Edward J. Hejlek, Reg. No. 31,525
SENNIGER, POWERS, LEAVITT & ROEDEL
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EJH/dfw

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Sheet 1 of 6

Complete if Known

Application Number	10/673,897
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First Named Inventor	Robert A. Holton
Group Art Unit	1625
Examiner Name	B. Trinh
Attorney Docket No.	FSUB 10479.2

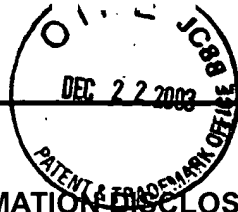
U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code ² (if known)		
	1	4,814,470		Colin et al.	03-21-1989
	2	4,857,653		Colin et al.	08-15-1989
	3	4,876,399		Holton et al.	10-24-1989
	4	4,924,011		Denis et al.	05-08-1990
	5	4,924,012		Colin et al.	05-08-1990
	6	4,942,184		Haugwitz et al.	07-17-1990
	7	4,960,790		Stella et al.	10-02-1990
	8	5,015,744		Holton	05-14-1991
	9	5,059,699		Kingston et al.	10-22-1991
	10	5,136,060		Holton	08-04-1992
	11	5,175,315		Holton	12-29-1992
	12	5,227,400		Holton et al.	07-13-1993
	13	5,229,526		Holton	07-20-1993
	14	5,274,124		Holton	12-28-1993
	15	5,384,399		Holton	01-24-1995
	16	5,430,160		Holton	07-04-1995

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Sheet	2	of	6	Attorney Docket No.	FSUB 10479.2

	17	5,466,834		Holton	11-14-1995
	18	5,532,363		Holton	07-02-1996
	19	5,539,103		Holton	07-23-1996
	20	5,574,156		Holton	11-12-1996
	21	5,717,115		Holton	02-10-1998
	22	5,723,634		Holton	03-03-1998
	23	5,760,219		Holton et al.	06-02-1998
	24	6,069,260		Holton	05-30-2000
	25	6,124,481		Holton	09-26-2000
	26	6,479,678	B1	Holton	11-12-2002

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T ⁶
		Office	Number ⁴	Kind Code ² (if known)			
	27	EP	0247378	B1	Kanegafuchi Chemical Ind. (JP)	12-02-1987	
	28	EP	0253738	A1	Rhone Poulenc	01-20-1988	
	29	EP	0253739	A1	Rhone Poulenc	01-20-1988	
	30	EP	0336840	A1	Centre National De La Recherche Scientifique	10-11-1989	
	31	EP	0336841	A1	Rhone Poulenc	10-11-1989	

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Robert A. Holton

Group Art Unit

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Examiner Name

B. Trinh

	32	EP	0400971	A2	Florida State University	12-05-1990	
	33	EP	1193252	A3	Florida State University	11-05-2003	
	34	WO	92/09589	A1	Rhone Poulenc	06-11-1992	
	35	WO	93/06079	A1	Florida State University	04-01-1993	

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

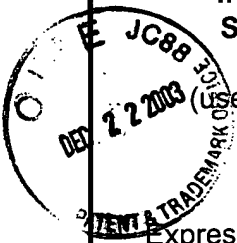
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	36	AOYAMA et al. "Photochemical Reactions of N-Benzoylformyl-N-(Phenylthiocarbonyl)-Amines. A Novel Photocyclization Involving 1,4-Phenylthio Migration" Tetrahedron Letters (1983), pp. 1169-1170, Vol. 24, No. 11, XP002224840, Elsevier Science Publishers, Amsterdam, NL	
	37	BARTHOLOMEW et al. "A Novel Rearrangement Reaction Conversion of 3-(Chloromethyl)azetidin-2-ones to Azetidine-3-Carboxylic Acid Esters" Tetrahedron Letters, Vol. 32, No. 36 (1981) pp. 4795-4798.	
	38	CHAN et al. "Taxa-4(16), 11-diene-5 α , 9 α , 10 α , 13 α -tetraol, a New Taxane Derivative from the Heartwood of Yew (<i>T. baccata</i> L.): X-Ray Analysis of a p-Bromobenzoate Derivative" Chem. Commun., Vol. 874 (1966) pp. 923-925.	
	39	CHEN et al. "Taxol Structure - Activity Relationships: Synthesis and Biological Evaluation of 2-Deoxytaxol" Tetrahedron Letters, Vol. 34, No. 20 (1993) pp. 3205-2306.	
	40	DELLA CASA DE MARCANO et al. "The Isolation of Seven New Taxane Derivatives from the Heartwood of Yew (<i>Taxus baccata</i> L.) Chem. Communications (1969) p. 1281.	
	41	DENIS et al. "A Highly Efficient Practical Approach to Natural Taxol" Journal of American Chemical Society, Vol. 110, No. 17 (1988) pp. 5917-5919.	
	42	DEUTSCH et al. "Synthesis of Congeners and Prodrugs. 3. Water-Soluble Prodrugs of Taxol with Potent Antitumor Activity" Journal of Medicinal Chemistry, Vol. 32, No. 4 (1989) pp. 788-792.	

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	43	EUROPEAN PATENT OFFICE "EP 1 193 252 A3 Annex to the European Search Report on European Patent Application No. EP 02 00 0688", European Patent Office, 13-12-2002, pp. 5	
	44	ETTOUATI et al. "Plantes de Nouvelle-Caledonie. 114. Taxanes isolés des feuilles d' <i>Austrotaxus spicata</i> Compton (Taxacees)" Bull. Soc. Chim. France (1988) p. 749.	
	45	FARINA et al. "The Chemistry of Taxanes: Unexpected Rearrangement of Baccatin III During Chemoselective Debenzoylation with Bu ₃ SnOMe/LiCl" Tetrahedron Letters, Vol. 33, No. 28 (1992) pp. 3979-3982.	
	46	FRAPPIER et al. "Alcaloïdes Peptidiques-X ^a . Approche de la Synthèse des Alcaloïdes Peptidiques 1. Réactivité de N-Tosyláziridines Vis-à-Vis de Réactifs Nucléophiles" Tetrahedron (1978), pp 2911-2916, Vol. 34, No. 19, XP002224841, Elsevier Science Publishers, Amsterdam, NL	
	47	HOLTON et al. "A Synthesis of Taxusin", Journal of American Chemical Society, Vol. 110 (1988) pp. 6558-6560.	
	48	HOLTON "Synthesis of the Taxane Ring System" Journal of American Chemical Society, Vol. 106 (1984) pp. 5731-5732.	
	49	JUST et al. "Beta-Lactams. XI. Synthesis of N-Phosphorylated Mono- and Bicyclic Beta-Lactams" ¹ Canadian Journal of Chemistry (1983), pp. 1730-1735, Vol. 61, No. 8, XP002224842, National Research Council, Ottawa, CA	
	50	KAISER et al. "Synthesis of Esters of Acid-Unstable Alcohols by Meand of n-Butyllithium" Journal of Organic Chemistry, Vol. 35 (1970) pp. 1198-1199.	
	51	KINGSTON et al. "The Taxane Diterpenoids" Progress in the Chemistry of Organic Natural Products, Wein, NY Springer-Verlag, 1993	
	52	KINGSTON et al. "New Taxanes from <i>Taxus Brevifolia</i> , Journal of Natural Products, Vol. 45, No. 4 (1982) pp. 466-470.	
	53	KLEIN "Synthesis of 9-Dihydrotaxol: A Novel Bioactive Taxane" Tetrahedron Letters, Vol. 34, No. 13 (1993) pp. 2047-2050.	
	54	LIU et al. "Constituents of the Heartwood of Taiwan Yew" Tai'wan Ko'hsueh, Vol. 38 (1984) pp. 119-125.	

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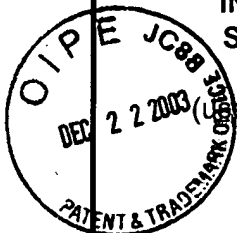
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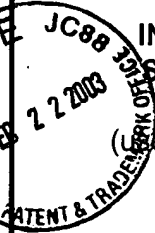
55	MAGRI et al. "Modified Taxols, 4. Synthesis and Biological Activity of Taxols Modified in the Side Chain" Journal of Natural Products, vol. 51, No. 2 (1988) pp. 298-306.
56	MILLER et al. "Antileukemic Alkanoids from <i>Taxus wallichiana</i> Zucc." Journal of Organic Chemistry, Vol. 46, No. 7 (1981) pp. 1469-1474.
57	MUKERJEE et al. "β-Lactams: Retrospect and Prospect" Tetrahedron, Vol. 34, No. 52 (1978) pp. 1731-1767.
58	OJIMA et al. "A Highly Efficient Route to Tacotere by the Beta-Lactam Synthon Method" Tetrahedron Letters (1993-06-25), pp 4149-4152, Vol. 34, No. 26, XP000561213, Elsevier Science Publishers, Amsterdam, NL
59	OJIMA et al. "Efficient and Practical Asymmetric Synthesis of the Taxol C-13 Side Chain, N-Benzoyl-(2R,3S)-3-phenylisoserine, and Its Analogues via Chiral 3-Hydroxy-4-aryl-β-lactams through Chiral Ester Enolate-Imine Cyclocondensation" Journal of Organic Chemistry, Vol. 56, No. 5 (1991) pp. 1681-1683.
60	OJIMA et al. "N-Acyl-3-Hydroxy-β-Lactams as Key Intermediates for Taxotere and its Analogs" Bioorganic and Medicinal Chemistry Letters, Vol. 3, No. 11 (1993) pp. 2479-2482.
61	OJIMA et al. "New and Efficient Approaches to the Semisynthesis of Taxol and its C-13 Side-Chain Analogs by Means of β-Lactam Synthon Method" Tetrahedron, Vol. 48, No. 34 (1992) pp. 6985-7012.
62	OJIMA et al. "Synthesis and Biological Activity of 3'-alkyl- and 3'-alkenyl-3'-dephenyldocetaxels" Bioorganic and Medicinal Chemistry Letters, Vol. 4, No. 21 (1994) pp. 2631-2634.
63	OJIMA et al. "Synthesis and Structure-Activity Relationships of Novel Nor-Seco Analogs of Taxol and Taxotere" Journal of Organic Chemistry (1994-02-11), pp 515-517, Vol. 59, No. 3, XP001094357, American Chemical Society, Washington, DC
64	OJIMA et al. "Synthesis of Novel 3'-Trifluoromethyl Taxoids Through Effective Kinetic Resolution of Racemic 4-CF ₃ -β-Lactams with Baccatins, Chirality, Vol. 9 (1997) pp. 487-494.
65	PALOMO et al. "Highly Stereoselective Synthesis of α-Hydroxy β-Amino Acids Through β-Lactams: Application to the Synthesis of the Taxol and Bestatin Side Chains And Related Systems" Tetrahedron Letters, Vol. 31, No. 44 (1990) pp. 6429-6432.

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	66	SAMARANAYAKE et al. "Modified Taxols. 5.1 Reaction of Taxol with Electrophilic Reagents and Preparation of a Rearranged Taxol Derivative with Tubulin Assembly Activity" Journal of Organic Chemistry, Vol. 56, No. 7 (1991) pp. 5114-5119.	
	67	SCHULTZ et al. "Synthesis of New N-Radicals of Tetrazan-I-yl" Chemical Abstracts, Vol. 108, No. 37298C (1988) p. 581.	
	68	SENILH et al. "Chime Organique Biologique-Hemisynthese de nouveaux analogues du taxol. Etude de leur interaction avec la tubuline" C.R. Acad. Sci. Paris, Serie II, t. 299, No. 15 (1984) pp. 1039-1043.	
	69	WANI et al. "Plant Antitumor Agents. VI. The Isolation and Structure of Taxol, A Novel Antileukemic and Antitumor Agent from Taxus Brevifolia" Journal of American Chemical Society, Vol. 93, No. 9 (5/5/1971) pp. 2325-2327.	
	70	WITHERUP et al. "High Performance Liquid Chromatographic Separation of Taxol and Related Compounds From Taxus Brevifolia" Journal of Liquid Chromatography, Vol. 12, No. 11 (1989) pp. 2117-2132.	
	71	YEH et al. "Some Taxane Derivatives From the Heartwood of <i>Taxus Mairei</i> " J. Chin. Chem. Soc., Vol. 35, No. 4, (1988) pp. 309-313.	
	72	ZHANG et al. "Taxanes From <i>Taxus Yunnanensis</i> " Phytochem., Vol. 29, No. 11 (1990) pp. 3673-3675.	

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